## REMARKS

Of the pending claims, claims 4, 6, 14, and 16 are rewritten. Independent claim 18 has been added. With this response, claims 4, 6, 14, 16, and 18 are now pending.

Applicant does not believe that any fees are due at this time; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Howrey Simon Arnold & White, LLP Deposit Account No. 01-2508/13240.0004.NPUS00/BNT.

Independent claim 18 describes diagnostic drugs comprising amino acids 1-164 of SEQ ID NO:4 or SEQ ID NO:6. Support for these amino acid fragments can be found in the Declaration of Fumio Osakada, filed on January 24, 2002. The specification at page 21, lines 19-20 also discuss that a fragment of HMG-1 or HMG-2 can be used in the described diagnostic assays.

### I. Rejection under 35 U.S.C. § 102

Claims 14 and 16 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ayer et al. (*Arthritis & Rheumatism*, 37(1): 98-103; 1994; hereinafter "Ayer").

The Examiner indicated that Ayer taught bovine HMG-1 and HMG-2 proteins, and that their ability to bind autoantibodies from patients with the recited diseases would be an inherent function of the proteins.

While not agreeing with the Examiner's position, Applicant has removed bovine HMG-1 and HMG-2 from the scope of claims 14 and 16 solely in order to expedite prosecution of the claims.

For a prior art reference to anticipate in terms of 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference. *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677, 7 U.S.P.Q.2d 1315, 1317 (Fed. Cir. 1988).

Applicant respectfully requests that the rejections of claims 14 and 16 under 35 U.S.C. § 102 be withdrawn.

## II. Rejection under 35 U.S.C. § 103

Claims 4 and 6 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Ayer in view of Zuk et al. (U.S. Patent No. 4,281,061; hereinafter "Zuk").

The Examiner cited Zuk as teaching that reagents for an immunoassay can be provided as kits. The Examiner found that it would have been obvious to assemble the reagents in a kit to standardize the reagents for optimization of the assay for use in a clinical laboratory or physician's office.

The instant invention is directed towards diagnostic drugs or kits for detecting an antibody of autoimmune diseases. Polypeptides having at least 90% amino acid sequence homology to SEQ ID NO:1, and polypeptides having at least 80% amino acid sequence homology to SEQ ID NO:2 are useful for their ability to specifically bind antibodies from an autoimmune disease patient. The antigen polypeptide can comprise amino acids 1-164 of SEQ ID NO:4 or amino acids 1-164 of SEQ ID NO:6.

ELISA systems have been constructed using HMG-1 and HMG-2, and have been used to show that a high percentage of antibodies from patients having rheumatoid arthritis, systemic lupus erythematosus, Sjögren's syndrome, Behcet's disease, scleroderma, primary biliary

cirrhosis, microscopic polyangitis/polyarteritis nodosa, ulcerative colitis, Crohn's disease, and autoimmune hepatitis are positive to these antigens with a high degree of certainty.

At the time of filing this application, a specific and simple diagnostic method for autoimmune disease was not available. The inventors undertook extensive experimentation to arrive at the disclosed invention. As described in the "Background Section" of the instant application, standard diagnostic methods used at the time of filing included endoscopy, biopsy, and X-ray examination. With some diseases (such as rheumatoid arthritis and systemic lupus erythematosus), various autoantibodies are produced. With other diseases (such as scleroderma, polymyositis, Behçet's disease, and periarteritis nodosa), few autoantibodies are produced, making clinical symptoms the main factors for diagnosis (specification; page 3, line 30 through page 4, line 2). Serodiagnosis was not generally used, and autoantibodies for many diseases had not been found. Developing a simple and objective method for detecting antibodies using the claimed antigens would require, and did require of the instant inventors, extensive experimentation.

Ayer reported studies analyzing the sera from patients with drug-induced lupus for autoantibodies to bovine HMG proteins. HMG-14 and/or HMG-17 bound 67% of the sera, while HMG-1 and/or HMG-2 bound only 21% of the sera. Despite this suggestion that HMG-1 and/or HMG-2 had a low binding percentage of sera samples, the instant inventors undertook to develop diagnostic drugs, kits, and methods for the detection of antibodies of autoimmune diseases.

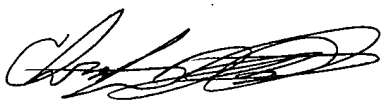
Applicant does not argue that generically assembling reagents into kits has not been known in the art. Applicant does assert that one of skill in the art, at the time of filing this patent application, would not have been motivated with a reasonable prediction of success, to assemble the kits of claims 4 and 6 in order to facilitate the diagnosis of an autoimmune disease.

Accordingly, Applicant requests that the rejections of claims 4 and 6 under 35 U.S.C. § 103 be withdrawn.

In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding objections and rejections are respectfully requested. All amendments are made in a good faith effort to advance the prosecution on the merits. Applicant respectfully submits that no amendments have been made to the pending claims for the purpose of overcoming any prior art rejections that would restrict the literal scope of the claims or equivalents thereof. Applicant reserves the right to subsequently take up prosecution of the claims originally filed in this application in continuation, continuation-in-part, and/or divisional applications.

The Examiner is encouraged to call the undersigned should any further action be required for allowance.

Respectfully submitted,



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